

*An Analysis of Written Information
on Appropriate Behavior in
Occupied Grizzly Bear Habitat*

FINAL REPORT FOR COOPERATIVE AGREEMENT Nr.
INT088323-COA with
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**AN ANALYSIS OF WRITTEN INFORMATION ON
APPROPRIATE BEHAVIOR IN
OCCUPIED GRIZZLY BEAR HABITAT**

by

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March 1992



Preface

The authors of this report would like to thank the Wilderness Management Research Unit at the Intermountain Research Station for its support of the research reported here. The authors would also extend their appreciation to Tim Hammond for his help in gathering the data reported here.

This research was supported in part by funds provided by the U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Introduction

Land management agencies often use written information as a means for educating and persuading visitors about appropriate behavior for particular recreation settings. Written information can be especially effective if visitors receive information prior to visiting a site. A prime opportunity for agencies to reach potential visitors is responses to pre-visit inquiries.

Fazio (1979) states four reasons why mailed responses may be effective. First, the visitor has initiated contact with an agency. Thus, the visitor should have a positive frame of mind for message reception and acceptance. Second, since the message will be received prior to the actual visit, there is a greater potential to influence visitor behavior. This strongly associates with the third reason, trip planning. For example, when a person is planning a backpack trip into grizzly habitat, certain equipment and types of food are recommended. If potential visitors are aware of these items prior to the trip and plan accordingly, the likelihood of a potential conflict with a bear should be reduced. Finally, agencies responding to visitor requests for information have the ability to be more personable than mass forms of communication. The agency responder can address the potential visitor by name, focus upon individual concerns, and suggest additional sources of information.

In conjunction with a study on persuasive communication and visitor behavior in occupied grizzly bear habitat (see Braithwaite and McCool 1992), a study was conducted to examine how specific agencies inform potential visitors of appropriate behavior necessary for grizzly habitat. In the past, agencies have recommended that backcountry

visitors adopt a number of behaviors to reduce confrontations with bears. These behaviors, shown in Table 1, seem to be universally maintained by bear management experts. However, do the visitor contact elements of land management agencies communicate these behaviors to potential visitors? This question was investigated in this study.

Methods

The first stage of the study was conducted during the summer of 1988. A letter was developed and mailed to seventeen U.S. national forests and national parks, state fish and game departments and Canadian national parks that currently manage occupied grizzly bear habitat. To simulate an actual communication situation between a specific management unit and potential visitor, there was no indication in the letter that this was part of a research project. Additionally, all mailed inquiries were exactly alike with each letter and envelope being handwritten, dated, and signed by *H. B. Graeme*, with no indication of title or gender.

The letter requested information on the backpacking opportunities within the management unit and also expressed a concern for potential problems with bears. To prevent any potential bias associated with the requester residing in western Montana, an area where residents are constantly receiving a variety of messages concerning grizzly bears, the letter was mailed from Bemidji, Minnesota. The request letters were all mailed on August 1, 1988 and 100% were returned to Bemidji by September 11, 1988. Appendix A contains both a complete list of the forests, parks, and fish and game departments contacted as well as copy of the letter.

The second stage of the study replicated the first stage. The same letter was mailed to the seventeen management units listed in Appendix A. In this stage, letters were mailed from two locations, Pensacola, Florida and Florence, Montana. Again, the letters were identical. The letters mailed from Florida were signed by M. L. Harris, while the letters from Montana were signed P. Hammond with no indication of title or gender. The request letters were mailed from Florida on April 25, 1991. All but one management unit, Wyoming Fish and Game, responded by June 4, 1991. The Montana request letters were mailed on April 26, 1991 and all were responded to by June 3, 1991.

The materials received included several different brochures on bear biology, ecology, identification, and the necessary behaviors to reduce conflicts with bears. Some brochures are published by individual agencies, but most are produced using the cooperative efforts of several agencies. For example, *Bear Us In Mind*, the most common bear brochure sent by agencies (MN - n=8, FL - n=5, and MT - n=5), was published by the Bureau of Land Management, U. S. Forest Service, U. S. National Park Service, U. S. Fish and Wildlife Service, and the Fish and Game Departments of Idaho, Montana, Washington, and Wyoming. Another brochure, *Grizzly*, *Grizzly*, *Grizzly*, a cooperative effort of the U. S. Forest Service and the National Park Service appeared in four of the information packets in 1988. The Nez Perce National Forest was the only management unit to send *Grizzly*, *Grizzly*, *Grizzly* in 1991.

Other brochures (*A Last Stand for Grizzly Bears - The Role of the Forest Service* (U.S. Forest Service), *You are in Bear Country* (Parks Canada), *Backpacking* (U.S. Forest Service) and *Bears and You* (U.S. Forest Service and

Alaska Fish and Game) were commonly included in the information packages in both 1988 and 1991. Other management units (Flathead National Forest, Gallatin National Forest, Glacier National Park, and Tongass National Forest) had produced a bear brochure specifically for their site.

In 1991, Montana Department of Fish, Wildlife and Parks dispersed a brochure, *Be Bear Aware*, that had not appeared in any of the information packets in 1988. The brochure is a well developed booklet aimed at teaching children about bears and appropriate behavior. However, the brochure could be an effective piece of information for individuals of all ages. Though the brochure was produced by the Interagency Grizzly Bear Committee, which involves individuals from the Bureau of Indian Affairs, Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. National Park Service, and state fish and game agencies from Idaho, Montana, Washington, and Wyoming; Montana's Department of Fish, Wildlife and Parks was the only agency to disperse the brochure.

Results

A simple analysis of each package of information received as a result of the inquiry was conducted to determine the frequency each behavior listed in Table 1 was mentioned. The behavior was only recorded when mentioned in the context of behaviors necessary for reducing the likelihood of a conflict with a bear. For example, *carry out garbage* was mentioned frequently in minimum impact camping literature as well as the popular *Pack It In, Pack It Out* message. This would not be counted if no reference to

reducing confrontations with bears was made.

Table 2 indicates the percentage of management units mentioning each of the behaviors for each of the mailings. The percentage of agencies advocating the recommended behaviors decreased from 1988 to 1991, with the exception of *wash dishes after each meal*. The percentage of agencies mentioning *use odor restrictive containers, cook downhill from sleeping area and camp away from animal and hiking trails* decreased greatly from 1988 to 1991.

Table 3 indicates the percentage of the thirteen behaviors listed in Table 1 mentioned by each of the agencies. In 1988, Yellowstone National Park included only one brochure, *Bear Us In Mind*, in all of their literature. However, all thirteen of the studied behaviors were mentioned in either this brochure or elsewhere in other forms of literature (i.e. park newspaper, backcountry maps). In 1991, the only brochure Yellowstone National Park sent containing information pertaining to appropriate behavior for grizzly country was the *Yellowstone Guide*, the Park's newspaper. The *Yellowstone Guide* contained only eight of the thirteen recommended behaviors.

Similarly, in 1988 Denali National Park provided no brochures which specifically dealt with bears and only mentioned nine of the recommended behaviors of which *use odor restrictive containers* was mentioned four times. In 1991, Denali National Park provided potential visitors with only a park map. The only recommended behavior the small print on the map indicated for visitors to practice was to *make noise on trail*. Lastly, in 1988 Waterton National Park sent several brochures, *You are in Bear Country* and *Waterton / Glacier Guide*. In 1991, Waterton National Park dispersed only a map of Waterton and

Glacier National Parks and information on hotel accommodations. None of the information sent in 1991 mentioned any of the appropriate behaviors listed in Table 1.

Several differences existed between the information concerning grizzly bears received in Florida and Montana. Montana Department of Fish, Wildlife and Parks dispersed *Be Bear Aware* to the Montana requestor, but did not send the brochure to the requestor in Florida. Similarly, the Gallatin National Forest sent the individual in Montana the *Bear Us In Mind* brochure, but did not include the brochure in the information sent to Florida. The Bridger-Teton National Forest sent *A Last Chance for Grizzly Bears* to Montana, but not to Florida. Lastly, the Nez Perce National Forest dispersed *Backpacking* to Montana, but not Florida. The Bridger-Teton National Forest was the only agency which included a piece of information on appropriate behavior for grizzly country to Florida, but not to Montana. The Forest sent *Bear Us In Mind* to Florida, but not to Montana.

Though most of the agency bear brochures contain information pertaining to the thirteen behaviors listed in Table 1, much of the text within the brochures consist of information on the biology, ecology and behavior of bears. For example, *Bear Us In Mind* devotes one and a half pages of a six page brochure to the recommended behaviors for reducing the likelihood of a confrontation with a bear. *A Last Stand for Grizzly Bears - the Role of the Forest Service* consists entirely of information on bear biology, ecology and behavior.

Often messages concerning the appropriate behaviors for occupied grizzly bear habitat appear interspersed with other information. For example, the Forest Service provides visitors with a newspaper, *Backpacking*. A variety of

issues (water quality, hypothermia, low impact camping) are mentioned within the newspaper. Of the six page newspaper, two columns are devoted to the recommended behaviors. Agency newspapers and brochures focusing on the rules and regulations within a specific wilderness or backcountry area often mention the risks associated with backpacking in grizzly bear country. However, the strength of the messages pertaining to appropriate behaviors for reducing these risks is often tempered by surrounding text.

Discussion

There are several important implications from the findings of this brief survey. First, the appropriate behavior message may be overridden by other messages. Second, the decline in message frequency has important implications for bear-human confrontations. And, third, residence of the inquiry appears to unnecessarily influence agency response. Each implication will be discussed in turn.

The potential for one message to override another message may exist. For instance, the message *A permit is required for all individuals planning to backpack in this wilderness area* may override the message *Make noise on the trail when hiking in grizzly country*. If an agency's objective is to effectively inform individuals of the appropriate behaviors necessary for backpacking in grizzly bear country, it could be assumed that a brochure primarily consisting of information on the recommended behaviors might be more influential on visitor behavior than a brochure with a wide range of information. Banff and Jasper National Parks' brochure *You are in Bear Country*, the cooperative Forest Service and Alaska Fish and Game

brochure *Bears and You*, and Montana Fish, Wildlife and Parks' brochure *Be Bear Aware* were the only forms of literature which exclusively consist of information pertaining to the appropriate behaviors recommended for grizzly bear country. Additional research should investigate the effectiveness of bear information that is interspersed with other forms of information.

We are startled by the result that the frequency with which recommended behaviors are mentioned has decreased dramatically over the last three years. In at least one area, confrontations with bears have increased (McCool and Braithwaite 1992) and bear management actions -- such as trail, area and campsite closures have generally increased in the northern Rocky Mountain ecosystem. We have no explanation for this decrease.

Finally, while we believe that agency messages need to be tailored to the needs of individual clients, there appears to be no legitimate reason for sending fewer messages to people living in Florida than Montana. It could be argued that individuals in Florida may need more information, as other forms of communication (i.e. newspapers, television) are available to Montanans. Nonetheless, all visitors should receive the same information regardless of residence or other social demographic characteristics.

Recommendations

As stated earlier, pre-visit inquiries provide agencies with the prime opportunity to influence visitor behavior. This study identifies several areas in which agencies can improve the quality of mailed information programs. First, the letter specifically requested for information concerning appropriate

behavior and knowledge for hiking and camping in grizzly country. Though most agencies sent information about proper behavior, a significant decrease existed in the number of agencies recommending a wide variety of behaviors from 1988 to 1991 (see Tables 2 and 3). Agencies need to take advantage of the receptive audience and provide the information requested or suggest other information sources.

Second, agencies need to be aware of a wide variety of information sources which they can disperse to visitors. For example, though many agencies (U.S. Forest Service, U.S. National Park Service, state fish and game departments) were involved in the development of the brochure, *Be Bear Aware*, only one management unit included the brochure in their information packet. Therefore, agencies need to be aware of the most current and upcoming information sources available for dispersal to the public.

And lastly, though it may be convenient to combine a wide variety of information (snow hazards, water hazards, hiking opportunities, rules and regulations of the area, etc.) into one brochure, brochures covering a specific topic may be more effective for influencing individuals behavior. Topics of great importance, such as safety in grizzly country, should easily warrant a brochure or pamphlet of their own.

Table 1. Appropriate Behaviors for Hiking and Backpacking in Grizzly Country.

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1. Store food in trees.
 2. Make noise on trail.
 3. Camp or hike in large groups (over 5).
 4. Wear or use bear bells.
 5. Wash dishes after each meal.
 6. Cook 300 feet away from campsite.
 7. Don't cook fish/bacon (odorous foods) for meals.
 8. Use odor restrictive containers.
 9. Wear clean clothes while sleeping.
 10. Cook downhill from sleeping area.
 11. Camp away from animal or hiking trails.
 12. Carry garbage out.
 13. Don't hike after dark.
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Table 2. Percentage of agencies (n=17) recommending each appropriate behavior for grizzly country by the three mailings.

<u>Behavior</u>	Mailing		
	<u>Minnesota 1988</u>	<u>Florida 1991</u>	<u>Montana 1991</u>
Store food in trees	100	71	76
Make noise on trail	94	82	82
Camp or hike in large groups	76	59	59
Wear or use bear bells	88	76	76
Wash dishes after each meal	41	53	65
Cook 300' away from campsite	82	59	65
Don't cook odorous foods	82	65	65
Use odor restrictive containers	82	35	35
Wear clean clothes sleeping	76	59	65
Cook downhill from sleep area	71	35	35
Camp away from trails	47	12	12
Carry garbage out	94	71	71
Don't hike after dark	35	29	35

Table 3. Percent of thirteen behaviors mentioned by each management unit by the three information requests.

<u>Management Unit</u>	<u>Information Request</u>		
	<u>Minnesota 1988</u>	<u>Florida 1991</u>	<u>Montana 1991</u>
Glacier National Park	92	77	77
Yellowstone National Park	100	62	62
North Cascades National Park	92	0	0
Denali National Park	69	8	8
Banff National Park	62	77	77
Waterton National Park	62	0	0
Jasper National Park	69	69	69
Nez Perce National Forest	77	92	92
Lewis and Clark National Forest	85	85	92
Kootenai National Forest	77	54	77
Gallatin National Forest	85	69	85
Flathead National Forest	92	92	92
Bridger-Teton National Forest	85	54	46
Tongass National Forest	92	54	54
Montana Fish, Wildlife and Parks	69	77	85
Wyoming Game and Fish	8	0	0
Alaska Fish and Game	54	46	46

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Appendix A

Letter Requesting Information

Dear Sir:

I am currently planning a backpack trip in your park (forest) for late August or early September. I would be interested in receiving any information you may have available concerning backpacking opportunities.

Additionally, I realize there are grizzly bears present in your park (forest). I'm somewhat concerned about seeing a bear on my backpack trip and would appreciate any advice you may have for reducing the chances of having a problem with bears.

Thank you for your help.

Sincerely,

H. B. Graeme
M. L. Harris
P. Hammond

Management Units to which Request Letters were Sent

Glacier National Park	Kootenai National Forest
Yellowstone National Park	Gallatin National Forest
North Cascades National Park	Flathead National Forest
Denali National Park	Bridger-Teton National Forest
Banff National Park	Tongass National Forest
Waterton Lake National Park	Montana Fish, Wildlife and Parks
Jasper National Park	Wyoming Game and Fish
Nez Perce National Forest	Alaska Fish and Game
Lewis and Clark National Forest	